

35.C10048 CI



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
HITOSHI SUGIMOTO, ET AL.) Examiner: C. Hallacher
Appln. No.: 08/811,234) Group Art Unit: 2853
Filed: March 3, 1997)
For: INK-JET RECORDING) November 22, 2000
APPARATUS AND INK-JET :
RECORDING METHOD USING :
INKS OF DIFFERENT :
DENSITIES, AND RECORDED :
ARTICLES :
:

Assistant Commissioner for Patents
Washington, D.C. 20231

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RESPONSE AND PETITION FOR EXTENSION OF TIME

Sir:

Applicants petition the Commissioner of Patents to extend the time for response to the Office Action dated May 23, 2000 for three (3) months, from August 23, 2000, up to and including November 23, 2000. A check in the amount of \$ 890.00 for payment of the extension fee is enclosed. Please charge any additional fee required for the extension, and credit any overpayment, to Deposit Account No. 06-1205.

In response to the Office Action dated May 23, 2000, Applicants respectfully request reconsideration and allowance of

this application.

Claim Status

Claims 1, 4-14, 17-22, 25-30, 33-35 and 37-84 are pending. Claims 1, 14, 21, 30, 37, 53, 61, 63 and 74 are independent.

Section 103 rejections

Claims 1, 4-14, 17-22, 25-30 and 33-35 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Matsumoto, et al. in view of Sugimoto, et al. Claims 37-84 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Matsumoto, et al. in view of Sugimoto, et al., and further in view of Sekiya (JP 1-242256). Applicants respectfully request reconsideration of these rejections.

Before addressing the merits of these rejections, Applicants believe it will be helpful to review some features of the claimed invention.

The present invention relates to plural inks having different dye densities within the same color series. An ink having a low dye density contains a component that provides the ink with high penetrability and makes the ink diffuse easily; an ink having a high dye density contains a component that provides the ink with low penetrability and makes the ink diffuse with

difficulty.

In this arrangement, the low dye density ink suppresses graininess in areas where the image density is low. On the other hand, the high dye density ink makes possible the recording of a high-density image, and provides sharpness even at an area where the image density is high.

Accordingly, the density representation of an image is satisfactorily reproduced by affirmatively adjusting the amount of a component of each of the plural inks having different dye densities. In other words, a satisfactory image can be recorded in both (1) portions where representation is made by using a high dye density ink and (2) portions where representation is made by using a low dye density ink.

Applicants submit that the claimed invention is neither taught nor suggested by the cited references.

Matsumoto, et al. discloses a method and apparatus that uses plural inks having different densities (concentrations) in the same color series. The Examiner acknowledges that it does not teach or suggest inks with different dye densities that also have different penetrabilities and different amounts of surfactant.

In the Office Action, at page 3, lines 4-5, the Examiner states that Sugimoto, et al. discloses an ink jet recording apparatus where inks of different densities have

different component ratios of a surfactant, in order to provide different penetrabilities. Applicants respectfully point out that the claimed invention relates not to inks having different densities, but to inks having different dye densities, which is not taught or suggested by Sugimoto, et al.

Sugimoto, et al. discloses an apparatus for adjusting an ink component so as to differentiate the penetrability in accordance with the different colors of the inks. Sugimoto, et al. is directed to the problem of blurring at a boundary region between plural colors of ink, and merely discloses that the penetrability of the plural colors of inks is determined in accordance with the brightness of the inks. Specifically, the penetrability of a colored ink having a high brightness is greater than that of a colored ink having a low brightness. Sugimoto, et al. also provides a structure for determining the penetrability of inks in accordance with their brightness, where the inks are of different colors. However, Sugimoto, et al. is silent with respect to the claim feature of determining the penetrability of plural inks in the same color series having different dye densities. In Applicants' view, the presently claimed invention is patentable over the combination of Matsumoto, et al. and Sugimoto, et al. for at least these reasons.

Further, Applicants submit that there is no

motivation for one skilled in the art to combine the teachings of Matsumoto, et al. and Sugimoto, et al. to arrive at the presently claimed invention. Sugimoto, et al. addresses the problem of blurring on the boundaries of printed regions of different colors by providing different colored inks having different penetrabilities. Matsumoto, et al. utilizes inks of the same color series having different concentrations to express different image densities. One skilled in the art would not look to a teaching of varying penetrabilities to avoid blurring of boundaries of differently colored inks in order to modify a teaching of combining inks of the same color series. Therefore, Applicants respectfully request that this rejection be withdrawn.

Sekiya discloses a structure for containing plural inks in a partitioned container. Sekiya is not, however, directed to plural inks having different dye densities in the same color series. It therefore does not remedy the deficiencies of Matsumoto, et al. and Sugimoto, et al. with respect to the presently claimed invention, and also fails to provide a motivation to combine them.

Applicants conclude that the claimed invention is not rendered obvious by the cited references, either singly or in the combinations proposed by the Examiner. Applicants therefore respectfully request reconsideration and withdrawal of the Section 103 rejections.

Comments Regarding Other References of Record

Applicants wish to point out that Takizawa is intended to suppress blurring in a boundary region between colors. To accomplish this objective, Takizawa teaches the use of two colors of inks, where a resin is formed, or alternatively, an ink viscosity is raised, when the inks are mixed.

Applicants note that Suga discloses that the composition of a black ink is different from that of a color ink. Specifically, the black ink is formed using a pigment, and the color ink is formed using a dye.

Conclusion

For the foregoing reasons, Applicants submit that the present invention is patentably defined by the independent claims. The dependent claims are also submitted to be patentable because they set forth additional aspects of the present invention and are dependent from the independent claims. Separate and individual consideration of each dependent claim is respectfully requested.

Applicants submit that this application is in condition for allowance and a Notice of Allowance is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All

correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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